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A.D. 1854 . . . . . N° 2099.

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S P E C I F I C A T I O N

OF

WILLIAM TUCKER.

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FURNACES.

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L O N D O N :

PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,

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25, SOUTHAMPTON BUILDINGS, HOLBORN.

1855.





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## Furnaces.

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*(This Invention received Provisional Protection, but notice to proceed with the application for Letters Patent was not given within the time prescribed by the Act.)*

**PROVISIONAL SPECIFICATION** left by William Tucker at the Office of the Commissioners of Patents, with his Petition, on the 30th September 1854.

I, WILLIAM TUCKER, of Old Brompton, do hereby declare the nature of the  
5 said Invention for “ PREVENTING THE ESCAPE OF FULIGINOUS SMOKE FROM SHAFTS AND FLUES ” to be as follows, that is to say :—

My said Invention has reference to constructing flues and shafts adapted to  
furnaces of all descriptions in such manner, and in connection with such  
machinery or apparatus, that the smoke passing through the said flues or  
10 shafts may escape in a state of extreme tenuity, and purified from all fuliginous  
particles, by which the surrounding air might be contaminated; and the  
manner in which I propose to carry out the aforesaid objects is as follows:—  
I construct a series of shafts or flues of any convenient number, communi-  
cating with each other by the upper and lower portions alternately; the outer  
15 wall of the said shafts or flues and one or more of the partitions between them  
being furnished with soot doors in the lower part, which may be opened or  
closed at pleasure, for the purpose of cleansing or repairing the apparatus; and  
in each such shaft or flue I place a series of caloric bars, set obliquely towards  
each other at regular intervals in horizontal planes, and secured at their centres  
20 to a vertical rod, which is fastened to the wall of the shaft or flue by a  
horizontal tie rod at the lower end; and under the said flues I place a tank of



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*Tucker's Invention for Preventing Escape of Smoke from Shafts and Flues.*

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water, furnished with a waste pipe for carrying off the surplus water; and over the flues or shafts I place a reservoir of water, from which I convey descending pipes, the ends of which are connected through the intervention of stop-cocks with horizontal pipes passing through the upper parts of the flues or shafts, and having a series of perforations on their upper surfaces. The 5 said stop-cocks or waterways being opened by a self-acting apparatus whenever fresh coal is placed on the furnace, the water from the reservoir flows into them, and issues in jets from the perforations in the upper surfaces, whence it partly falls into the tank beneath, and partly is converted into steam by impinging against the heated walls of the flue and the caloric bars. The water 10 thus falling towards the reservoir carries down the fuliginous particles of the smoke, which are removed with it through the waste pipe, while the part which is converted into steam produces an increased draught through the flues, by which the remainder of the smoke is carried off in a thin transparent stream through the main shaft of the chimney. 15

I claim the general arrangement of flues and shafts, and of machinery or apparatus in connexion therewith, in the manner and for the purposes herein set forth and described.

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LONDON :

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Printers to the Queen's most Excellent Majesty. 1855.